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COMPLETE SPECIFICATION.

Improvements in Devices for Making Soil Blocks.

I, ROY DEASON, a British Subject, of Sapphrite, Penzance, Cornwall, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to devices for making soil blocks for use in horticulture, seeds, seedlings, cuttings or growing plants being sown or planted and grown to partial or full maturity in such blocks thereby eliminating the use of normal flower pots and similar soil containers.

An object of the present invention is the provision of such a device which produces blocks which are capable of retaining their shape and soil content during the period required for the germination or growth of the plant contained therein.

According to the present invention, a device for making soil blocks comprises a cup-like member for receiving soil which members tapers outwardly towards its open mouth, and, disposed in the closed bottom of the member, a movable soil pressure member in the form of a disc, piston or the like, the soil pressure member having a protuberance on its soil engaging side which protuberance makes the necessary hole in a block for a seed, seedling or cutting.

Preferably, the cup-like member is of frusto-conical shape, that is, of standard flower pot shape, but it may be of any other suitable tapered shape which allows soil block compressed within the cup-like member to be readily ejected or removed from the open end or mouth of the said member.

The soil pressure member may be mounted on an axial rod sliding in a bush in the bottom of the cup-like member, the rod being provided with a flat circular disc at its outer end. The cup-like member may

be provided with a handle or handles at its closed bottom lying transverse to the axis of the said member and the said rod may pass through the handle, engagement of this said disc with the handle(s) limiting the inward movement of the pressure member.

In order that the invention may be clearly understood, one construction of device in accordance with the present invention will now be described by way of example with reference to the four Figures of the accompanying drawing in which Figure 1 shows a part central section along the axis of the device, Figure 2 a perspective view of the device being used to make a soil block for one type of use, Figure 3 a perspective view of the block made in Figure 2 carrying a seedling, and Figure 4 a perspective view of the device being used to make a soil block for another type of use.

Referring now to the drawing, more particularly Figure 1 thereof, the device comprises a cup 1 which may be of brass and is of frusto-conical or normal flower pot shape, having an open end or mouth 2 and a closed bottom 3. Located centrally in the closed bottom 3 of the cup is a brass bush or bearing 4 for a piston rod 5 which lies on the axis of the cup 1 and slides in the bush or bearing 4. Attached as by soldering or brazing to the piston rod 5 which may also be of brass, is a piston or soil pressure member 6 which has a cylindrical portion 7 with a closed end 8 which portion fits over the inner end of the rod 5, a flared or frusto-conical portion 9 and a flat annular rim portion 10 which is of diameter just less than the diameter of the bottom of the cup 1 so that the piston 6 sits down in the cup on the bottom 3 and substantially covers it.

The piston rod 5 projects from the bush 4 outside the cup 1 and at its free end carries a circular flat disc 11 which forms both an operating pressure plate and a base

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plate upon which the complete device can rest or stand. The bush 4 also carries a handle 12 in the form of a tube screwed onto a threaded end part 13 of the bush 4, the rod 5 passing through the handle 12 which lies with its axis perpendicular to the axis of the cup 1 but in the same plane. The tube forms a double handle for engagement by the fingers of an operator (as shown in Figure 2).

In Figure 1, the outer and inner positions of the piston 6, piston rod 5 and disc 11 are shown respectively in full and broken lines, the inward movement of the piston 6 being determined by the free length of the rod 5 between the disc 11 and the surface of the handle 12. At the end of the inward travel of the piston 6, the disc 11 engages the handle 12. If desired, the disc 11 may have a limited amount of adjustment along the length of the rod 5. In addition, or alternatively, means may be provided for biasing the piston 6, rod 5 and disc 11 to their outer positions. Thus, a spiral or helical spring may be placed around the rod 5 between the disc 11 and the handle 12 (or the bush 4 if the handle 12 be suitably apertured), the function of the spring being to return the piston 6 to the bottom 3 of the cup 1 after a soil block has been ejected.

The advantages of making the cup 1 of frusto-conical shape are firstly that improved compression of the soil is obtained with the cup compared with known devices and secondly that a small movement of the piston 6 when ejecting a soil block will readily release the soil block from the cup unlike known forms of device having parallel sides and which require the complete traverse of a piston to release and eject a soil block.

In operation, the device described has two distinct functions, which are:—

(1) The production of soil blocks having a concentric hole for the insertion of seeds or plants; and

(2) The planting of rooted cuttings and plants (requiring larger holes than the above).

Use of the device for the first function is illustrated in Figures 2 and 3 and referring additionally to these Figures, the piston 6 is drawn to the bottom of the cup 1 by pulling out the piston rod 5 via the disc 11. The cup 1 is then filled with soil by pressing it into a box of soil (not shown) by means of the handle 12. The open end 2 of the cup 1 is then placed on any suitable hard flat surface and pressure is applied to the disc 11 which acts as a base pressure plate to compress the soil within the cup 1. The device is then lifted from the flat surface and slight pressure applied to the disc 11. This pressure moves the piston 6 further

into the cup 1 and releases and ejects the complete soil block 14 which has on its smaller diameter face an indentation 15 formed by the specially shaped piston 6. A seed, seedling or plant may then be planted in the hole or indentation 15 and grows as shown in Figure 3.

In carrying out its second function, which is illustrated in Figure 4 and to which reference is now made the device is placed on a bench or other suitable base with its open end 2 uppermost. Standing on its own pressure base plate or disc 11, the cup 1 is raised by the handle 12 and held in the position whereby the piston 6 is withdrawn into the bottom 3 of the cup 1. Soil is then pressed down onto the piston face in the bottom of the cup and a seedling or plant 16 is placed therein. The cup 1 is then filled with soil and compressed as in normal potting. Downward pressure is next applied to the cup 1 by means of the handle 12 to release the cup 1 from the soil block 14. When the cup 1 has been pressed so that the handle 12 rests on the base pressure plate or disc 11, the soil block 14 remains exposed on the top of the piston 6 from where it can be removed. Since planting takes place whilst the soil is in the cup 1, there is no danger of the soil collapsing as there is in known types of devices where planting takes place after ejection of the soil block.

It will be apparent from the above described functions that the device enables either the top or bottom of the soil block 14 to be used as required.

As the size of the device is not restricted, a small version of the device may be used to produce small soil blocks for germinating seed and also for transplanting very small rooted seedlings which would normally require small pots. This principle applies throughout the normal range of sizes applicable to pots used in horticulture.

What I claim is:—

1. A device for making soil blocks comprising a cup-like member for receiving soil which member tapers outwardly towards its open mouth and, disposed in the closed bottom of the said tapered member, a movable soil pressure member in the form of a disc, piston or the like, the soil pressure member having on its soil engaging side a protuberance which is arranged to make a seed or planting hole in the soil block.

2. A device as claimed in Claim 1, wherein the cup-like member is of frusto-conical shape.

3. A device as claimed in Claim 1 or Claim 2, wherein the soil pressure member is arranged to move along the axis of the cup-like member.

4. A device as claimed in any preceding claim, wherein the soil pressure member is

mounted on an axial rod sliding in a bush in the bottom of the cup-like member.

5. A device as claimed in Claim 4, wherein the said rod is provided with a flat circular disc at its outer end, which disc is arranged to act both as an operating pressure plate and as a base plate or stand.

6. A device as claimed in Claim 5, wherein the cup-like member is provided with a handle or handles at its closed bottom lying transverse to the axis thereof, engagement of the said disc with the handle(s) being arranged to limit the inward movement of the pressure member.

7. A device as claimed in any of the preceding claims, wherein the soil pressure

member comprises a member generally of frusto-conical shape with a flat annular rim portion and a cylindrical tip.

8. A device as claimed in any preceding claim, wherein the soil pressure member is biased towards the bottom of the cup-like member.

9. A device for making soil blocks and substantially as hereinbefore described with reference to the accompanying drawing.

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PROVISIONAL SPECIFICATION.

Improvements in Devices for Making Soil Blocks.

I, ROY DEASON, a British Subject, of Sappbrite, Penzance, Cornwall, do hereby declare this invention to be described in the following statement:—

This invention relates to devices for making soil blocks for use in horticulture and provides the hereinafter described improvements therein.

The invention consists of a device for producing compressed blocks of suitable soil in which seeds, seedlings, cuttings or growing plants can be sown or planted and grown to partial or full maturity.

One object of the invention is to produce a block of soil compressed to the required degree to retain its shape and soil content during the period required for the germination or growth of the plant contained therein and to eliminate the use of normal flower pots and similar soil containers.

Whereas the use of some known forms of soil block makers is restricted to the production of soil blocks having a concentric hole for the insertion of the seeds or plants and are therefore limited in their use by the strength of the wall of soil surrounding the concentric hole, the present invention provides an appliance which eliminates the aforesaid limitation.

The invention enables large rooted cuttings to be set in the block of soil and the soil to be compressed around and about the root formation, either horizontally or vertically.

The invention provides a device which performs two distinct functions, one being the production of a soil block having a concentric hole for the insertion of seeds or plants and the second function being the provision of a container into which soil is compressed around and about rooted or other cuttings, growing plants and plants

requiring a larger hole than the usual form of soil block maker will permit without collapse of the soil surrounding the hole.

Whereas in known forms of soil block makers the soil block is ejected from the soil block maker before the seed or plant is planted, this invention provides for the planting to be carried out while the soil block is contained in the device. By this method it is impossible for the block to collapse during the planting operation and any required pressure can be applied to the soil without the soil collapsing. Ejection of the soil block from the device takes place after the planting is completed.

In one form of the invention the device consists of a conical shaped cup having its larger diameter end open and its smaller diameter end closed or partially closed. Centrally located and fixed in its smaller end is a bearing through which passes a piston rod. Attached to the said rod and within the cup is a flat disc piston of similar diameter to the interior of the smaller end of the conical cup. Mounted concentrically on and attached to the disc piston is a small conical block. The piston rod projects beyond the outer end of the central bearing for a predetermined distance. Attached to the outer end of the piston rod is a disc which forms both an operating pressure plate and or a base plate on which the complete device can rest. The predetermined length of the piston rod beyond the outer end of the central bearing is governed by the length of traverse required of the piston and the aforesaid base pressure plate becomes the limiting stop for the piston movement. The movement of the piston within the conical cup is concentric within the cup throughout the whole of its traverse.

Attached to the outer end of the central bearing and the smaller end of the conical cup is a cross member placed at right-angles to the piston rod and shaped to form two small projecting handles.

In the construction before described the conical cup which forms the soil container has been so shaped because:—

(1) Improved compression of soil can be obtained as the soil is pressed into the container: and

(2) A small movement of the piston when ejecting the soil block will release the soil block from the conical container, unlike known forms of soil block makers having parallel sides and which require the complete traverse of a piston to release and eject the block.

In operation the device described has two distinct functions:—

(1) The production of soil blocks having a concentric hole for the insertion of seeds or plants.

(2) The provision of a device which enables rooted cuttings and plants (requiring larger holes than the above) to be accommodated.

In operation for function (1) the piston is drawn to the bottom of the conical cup by pulling out the piston rod via the base pressure plate. The conical cup is then filled with soil by pressing it into a box of soil by means of the projecting handles. The larger diameter and open end of the conical cup is then placed on a hard flat surface and pressure is applied to the base pressure plate to compress the soil within the conical cup. The device is then lifted from the flat surface and pressure applied to the pressure base plate. This pressure moves the piston and releases and ejects the complete soil block which has on its smaller diameter face the indentation formed by the small conical block mounted on the piston.

In function (2) the device is placed on a bench or suitable base. Standing on its own pressure base plate the cup is raised via the projecting handles and held in a position whereby the piston is withdrawn into the base of the cup. Soil is then pressed onto the piston face in the base of the cup and the seedlings or plants are placed therein and the cup is filled with soil and compressed as in normal potting. Downward pressure is applied by means of the projecting handles to release the conical cup from the soil. When the conical cup has been pressed down to rest on the base pressure plate the soil block remains exposed on the top of the piston from where it can be removed.

It will be apparent from the above described functions and operations (1) and (2) that the device enables either the top or bottom of the soil block to be used as required.

As the size of the device is not restricted, a small version of the invention can be used to produce small blocks for germinating seed and also for transplanting very small rooted seedlings which would normally require small pots. This principle applies throughout the normal range of sizes applicable to pots used in horticulture. The invention is therefore not restricted in size and although the form of the invention hereinbefore described employs a conical soil cup the said cup can, if required, be of different shape.

In a modified form of the invention a spiral spring is inserted between the outer end of the central bearing and the pressure base plate, the said spring being located concentrically round the piston rod. The function of this spring is to return the piston to the bottom of the conical cup or soil container after the soil block has been ejected.

ROY DEASON.

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the Original on a reduced scale.

FIG. 2.

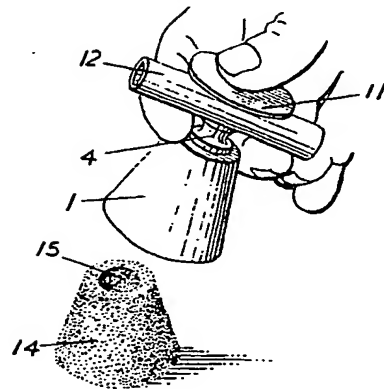


FIG. 3.



FIG. 4.

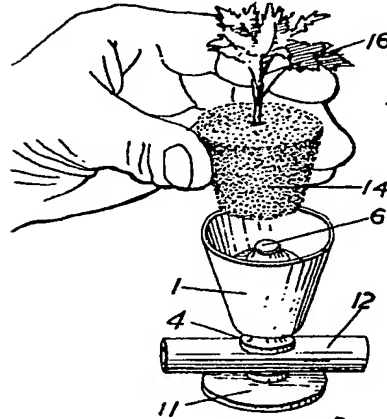
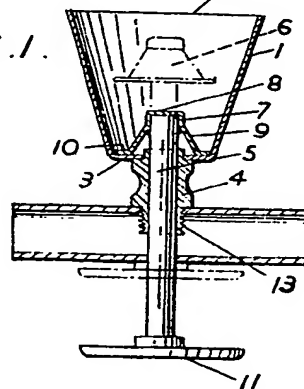


FIG. 1.



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